CDC: Mosquitoes are a Nuisance but Their Bite Can Transmit Serious Diseases and Viruses

Mosquitoes are common, flying insects that live in most parts of the world. Over 3,700 types of mosquitoes can be found worldwide. Over 200 types of mosquitoes live in the continental United States and US territories; of these 200, about 12 types spread pathogens (germs) through bites that can make an individual sick. An individual who gets bitten by a mosquito and gets sick has a mosquito-borne disease, like West Nile virus, dengue, or malaria. Other mosquitoes bother individuals and are considered nuisance mosquitoes. In general, nuisance mosquitoes do not spread germs. Because an individual can't tell which mosquito could be spreading germs when it bites, it is important to protect yourself from mosquito bites.

Some mosquitoes can be vectors. A vector is an animal, insect, or tick that spreads pathogens (germs), such as viruses and parasites, to individuals and animals.

Only some types of mosquitoes can spread germs (viruses and parasites) to people and animals. West Nile virus is one of the most common mosquito-borne diseases in the continental United States. Dengue, chikungunya, and Zika virus outbreaks have occurred in US states and territories, including Florida, Hawaii, Texas, Puerto Rico, the US Virgin Islands, and American Samoa.

Malaria was common in the United States into the 20th century. Most of the continental United States has *Anopheles* mosquitoes (particularly *An. freeborni* and *An. quadrimaculatus*), which can spread malaria. Local US mosquito-borne spread has resulted in more than 150 locally acquired cases and more than 60 limited outbreaks in the United States over the past 50 years. In addition, more than 2,000 cases of malaria are reported annually in the United States, with most cases occurring in returned travelers.

Here are facts About Mosquitoes:

- **Adult mosquitoes live indoors and outdoors.**
- **Mosquitoes can bite day and night.**
- **Adult mosquitoes live for about 2 to 4 weeks depending on the species, humidity, temperature, and other factors.**
- **Female mosquitoes often live longer than male mosquitoes.**
- **Only female mosquitoes bite people and animals to get a blood meal.**
- **Female mosquitoes need a blood meal to produce eggs.**
- **Mosquitoes get infected with germs, such as viruses and parasites, when they bite infected people and animals.**
- **It takes just a few infected mosquitoes to start an outbreak in a community and put an individual and their family at risk of becoming sick.**

For a mosquito to get infected with a germ and then spread that germ to individuals or animals is a complex process.

1. **A mosquito takes a blood meal from a person or animal.**
2. **When a mosquito bites an individual, it pierces the skin using a special mouthpart (proboscis) to suck up blood.**
3. **If the blood meal contains a germ, then the germ must pass from the mosquitoes' gut into its body.**
4. **Mosquitoes do not transmit all kinds of germs, only those that can grow or multiply in the body of the mosquito.**
5. **The germ multiplies in the body of the mosquito. Then the germ moves from the body into the salivary glands where saliva is made. This process takes 2-3 weeks.**
6. **The germ passes from the salivary glands into the blood of the person or animal being bitten.**
7. **As the mosquito is feeding, it injects saliva into an individual's skin.**
8. **An individual's body reacts to the mosquito saliva after the mosquito finishes its blood meal.**
9. **Some individuals have only a mild reaction to a bite or bites resulting in a bump and itching. Others react more strongly, and a large area of swelling, soreness, and redness can occur.**
10. **The individual or animal can get sick.**

Ability of a mosquito to get infected with and spread a germ depends on:

- **The type of germ**
- **Environmental conditions, like temperature**
- **The amount of a germ eaten during a blood meal**
- **The age of the mosquito**

In the United States, the most common types of mosquitoes that can spread germs include:

- ***Aedes* species mosquitoes (*Ae. aegypti*)**
- ***Culex* species mosquitoes (*Cx. pipiens*, *Cx. tarsalis*, *Cx. quinquefasciatus*)**
- ***Anopheles* species mosquitoes (*An. freeborni* and *An. quadrimaculatus*)**

Most types of mosquitoes in the United States are nuisance mosquitoes. These mosquitoes do not spread germs that make people sick.
Nuisance mosquitoes can become a problem immediately following heavy rains, or natural disasters, such as hurricanes or floods. When individuals spend time outside cleaning up after a hurricane or flood, they are more likely to be bitten by nuisance mosquitoes. Large numbers of nuisance mosquitoes can affect recovery efforts. For this reason, local or state mosquito control experts will often take steps to control these mosquitoes.

Some mosquitoes like living near individuals, while others prefer forests, marshes, or tall grasses. All mosquitoes like water because mosquito larvae and pupae live in the water with little or no flow.
Different types of water attract different types of mosquitoes.

- **Permanent water mosquitoes: These mosquitoes tend to lay their eggs in permanent-to-semi-permanent bodies of water.**
- **Some mosquitoes prefer clean water, while others like nutrient-rich waters.**
- **Some mosquitoes lay eggs near the edges of lakes and ponds, or among plants in swamps and marshes, or in containers that hold water.**

Floodwater mosquitoes: These mosquitoes lay their eggs in moist soil or in containers above the water line. The eggs dry out, then hatch when rain floods the soil or container.

Floodwater habitats include:

- **Temporary pools and ponds created by melting snow or rain.**
- **Floodplains along stream and riverbanks.**
- **Irrigated fields and meadows.**
- **Containers that hold water and fill up after a rain shower.**
- **Tree holes that collect rainwater**

Mosquito bite signs include:

- **A puffy and reddish bump appearing a few minutes after the bite.**
- **A hard, itchy, reddish-brown bump, or multiple bumps appearing a day or so after the bite or bites.**
- **Small blisters instead of hard bumps.**
- **Dark spots that look like bruises**

More severe reactions can occur in:

- **Children**
- **Adults bitten by a mosquito species they haven't been exposed to previously.**
- **Individuals with immune system disorders.**
- **Individuals experiencing more severe reactions may have the following signs:**
    - **A large area of swelling and redness**
    - **Low-grade fever**
    - **Hives**
    - **Swollen lymph nodes**

When a mosquito bites an individual, the treatment is as follows:

- **Wash the area with soap and water.**
- **Apply an ice pack for 10 minutes to reduce swelling and itching.**
- **Reapply ice pack as needed.**

- **Apply a mixture of baking soda and water, which can help reduce the itch response.**
    - **Mix 1 tablespoon baking soda with just enough water to create a paste.**
    - **Apply the paste to the mosquito bite.**
    - **Wait 10 minutes.**
    - **Wash off the paste.**

- **Use an over-the-counter anti-itch or antihistamine cream to help relieve itching.**
- **Follow the product label directions.**

Do not scratch bites. They can become infected.

For an infected bite:

- **An infected bite may appear red, feel warm, or a red streak will spread outward from the bite.**
- **See a healthcare provider if symptoms worsen.**

An individual can protect yourself and your family from mosquito bites.
To prevent mosquito bites:

- **Treat clothing and gear with permethrin.**
- **Use Environmental Protection Agency (EPA)-registered insect repellents.**
- **Wear long-sleeved shirts and long pants.**
- **Control mosquitoes inside and outside.**
- **Prevent mosquito bites when traveling overseas.**
- **Use insect repellent**
    - **Use Environmental Protection Agency (EPA)-registered insect repellents with one of the active ingredients below.**
    - **When used as directed, EPA-registered insect repellents are proven safe and effective, even for pregnant and breastfeeding women.**
        - **DEET**
        - **Picaridin (known as KBR 3023 and icaridin outside the US)**

- **IR3535**
- **Oil of lemon eucalyptus (OLE)**
- **Para-menthane-diol (PMD)**
- **2-undecanone**
- **To find the right insect repellent for individuals, use the Environmental Protection Agency EPA's search tool.**

Tips for babies and children

- **Dress your child in clothing that covers arms and legs.**
- **Cover strollers and baby carriers with mosquito netting.**
- **When using insect repellent on your child:**
- **Always follow label instructions.**
- **Do not use products containing oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD) on children under 3 years old.**
- **Do not apply insect repellent to a child's hands, eyes, mouth, cuts, or irritated skin.**
- **Adults: Spray insect repellent onto your hands and then apply to a child's face.**

Tips for everyone

- **Wear loose-fitting, long-sleeved shirts and pants.**
- **Always follow the product label instructions.**
- **Reapply insect repellent as directed.**
- **Do not spray repellent on the skin under clothing.**
- **For individuals who are also using sunscreen, apply sunscreen first and insect repellent second.**
- **Treat clothing and gear**
- **Use 0.5% permethrin to treat clothing and gear (such as boots, pants, socks, and tents) or buy permethrin-treated clothing and gear.**
- **Permethrin is an insecticide that kills or repels mosquitoes.**
- **Permethrin-treated clothing provides protection after multiple washings.**

- **Read product information to find out how long the protection will last.**
- **If treating items yourself, follow the product instructions.**
- **Do not use permethrin products directly on skin.**
- **Natural insect repellents (repellents not registered with EPA)**
- **We do not know the effectiveness of non-EPA registered insect repellents, including some natural repellents.**
- **To protect yourself against diseases spread by mosquitoes, CDC and EPA recommend using an EPA-registered insect repellent.**
- **Choosing an EPA-registered repellent ensures the EPA has evaluated the product for effectiveness.**
- **Visit the EPA website to learn more.**

To control and kill mosquitoes outside of the home:

- **Remove Standing Water Where Mosquitoes Lay Eggs**
- **Once a week, empty and scrub, turn over, cover, or throw out any items that hold water like tires, buckets, planters, toys, pools, birdbaths, flowerpot saucers, or trash containers. Mosquitoes lay eggs near water.**
- **Tightly cover water storage containers (buckets, cisterns, rain barrels) so mosquitoes cannot get inside to lay eggs.**
- **For containers without lids, use wire mesh with holes smaller than an adult mosquito.**
- **Fill tree holes to prevent them from filling with water.**
- **For individuals who have septic tanks, repair cracks or gaps.**
- **Cover open vent or plumbing pipes.**
- **Use wire mesh with holes smaller than an adult mosquito.**

Kill Mosquito Larvae

- **Use larvicides to treat large bodies of water that will not be used for drinking and cannot be covered or dumped out.**
- **When using larvicides, always follow label instructions.**

Kill Mosquitoes

- **Use an outdoor adulticide to kill adult mosquitoes in areas where they rest.**
- **Mosquitoes rest in dark, humid areas like under patio furniture or under the carport or garage. When using insecticides, always follow label instructions.**

Keep Mosquitoes Out

- **Install or repair and use window and door screens.**
- **Close doors, including garage doors.**
- **Do not leave doors propped open.**
- **Use air conditioning when possible.**

Mosquitoes rest in dark, humid places like under sinks, in showers, in closets, under furniture, or in the laundry room. Mosquitoes entering your house from outdoors can start laying eggs indoors. Take the following steps to control mosquitoes inside of the home:

- **Once a week, empty and scrub, turn over, cover, or throw out any items that hold water, such as vases or flowerpot saucers, to remove mosquito eggs and larvae.**
- **Use an indoor insecticide if there are still mosquitoes in the home after installing and repairing screens and emptying and scrubbing containers.**
- **An indoor insect spray or fogger will kill mosquitoes and treat areas where they rest.**
- **These products work quickly but may need to be reapplied.**
- **Always follow label directions.**
- **Using only an indoor insecticide will not keep the home free of mosquitoes.**
- **Hire a pest control professional to treat areas inside the home.**
- **The National Pest Management Association offers tips on finding a pest control professional.**
- **For more information on insecticides and health:**
- **The Environmental Protection Agency oversees the registration of these chemicals.**

- **The National Pesticide Information Center (NPIC)external icon provides information online or through a toll-free number, 1-800-858-7378.**